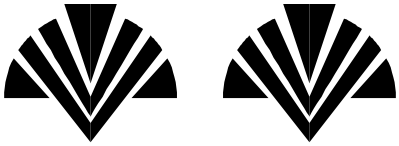
THE ENHANCED SCHOOL HEALTH SERVICES PROGRAM DATA REPORT



1998-99 School Year

Massachusetts Department of Public Health
Bureau of Family and Community Health
Office of Statistics and Evaluation
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Acknowledgments

Author
Robert B. Leibowitz, Ph.D.
Office of Statistics and Evaluation
Bureau of Family and Community Health
Massachusetts Department of Public Health

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For additional copies of this report, please contact the OSE administrative assistant at:

Massachusetts Department of Public Health
Bureau of Family and Community Health
Office of Statistics and Evaluation
250 Washington Street, 5th Floor
Boston, MA 02108-4619
(617) 624-5536

Introduction

In recent years four major changes have dramatically affected school health services: (a) changes in family structure and patterns of parental employment, (b) the impact of diverse cultural and linguistic groups, (c) an increase in the number and severity of illness in students with special health care needs who are enrolled in schools, and (d) the rise of social morbidities such as substance abuse, depression, and violence among children.

These changes have resulted in an increased demand for health services in the schools:

- With more working parents, children who are sick with mild or chronic conditions are less likely to be monitored at home on school days and more likely to be sent to the school nurse for assessment and a determination as to whether they need to see a physician.

- Some "newcomer" groups rely on the school as a source of information about what services or providers are available in the community. They may not understand how to obtain care elsewhere because of language or cultural barriers and therefore may look to the school health service for assistance.

- Improved medical technology has enhanced the health of children and adolescents with a variety of conditions and diseases previously associated with short life expectancy, e.g., cystic fibrosis, childhood leukemia, diabetes, juvenile rheumatoid arthritis and kidney disease. In addition, children assisted with medical technology, e.g., catheterizations, tracheostomies, ventilators, etc., are now attending school. Enhanced social attitudes promoting inclusion, as well as state and national laws related to disability rights and access to education, have resulted in more children requiring nursing care and other health-related services during the school day.

- Students spend a large part of their day at school; therefore, the school can be an important site where health and education risks, e.g., depression, absenteeism, substance use, may be identified and interventions made. This can result in increased demands on professional health services in the schools.

The Department of Public Health recognizes the need for quality school health services and provides consultation to all of the Commonwealth's school districts. Since 1993, with resources from the Health Protection Fund, the Department of Public Health has extended to a limited number of school systems the opportunity to expand on the basic school health services model by establishing the Enhanced School Health Service Program (ESHS). At that time thirty-six school districts were funded for three and half years to: (a) strengthen the infrastructure of school health services in the area of personnel and policy development, programming, and interdisciplinary collaboration; (b) incorporate health education programs, including tobacco prevention and cessation programs, into the existing school health programs; and (c) develop linkages between school health service programs and community health care providers.

In October 1997, the Department funded 19 school districts (with 18 separate contracts[1]) under the Enhanced model and 8 school districts with experience in developing the Enhanced model to provide consultation to approximately 64 (8 each) additional school districts ("recipient schools") desiring to start similar school health service programs across the Commonwealth.

School systems for both models were selected for participation through a competitive bid process based on a Request for Response (RFR) developed by the Massachusetts Department of Public Health (MDPH). The staff in the School and Adolescent Unit in the Division of Maternal, Child, and Family Health within the MDPH Bureau of Family and Community Health administer the program.

Data Collection Methods

Over the course of the 1998-99 school year, data were collected from the 19 ESHS school districts and 8 ESHSC school districts (see **Appendix A**) whose contractual obligations require them to submit activity reports once a month to MDPH. This **monthly activities report** focuses on questions regarding health services activities, medication management, medical procedures, case management, and tobacco prevention services that took place during the prior month.

In addition, the 19 school districts in the ESHS program and 8 school districts in the ESHSC program submitted **status reports** twice a year regarding program infrastructure, MIS development, quality evaluation, and health screenings and surveys. The recipient school districts in the ESHSC program submitted this report once a year.

Data from the monthly activities reports submitted by ESHS/ESHSC program districts during the 1998-1999 school year is the primary source of information for the statistics presented here. The summary statistics contained in this report were generated from monthly reports submitted during the entire school year—September 1, 1998 to June 30, 1999 (ten months). *Note that the statistics presented in previous editions of the annual data report only covered the January 1 - April 30 time period (four months).*[2] *As a result, the reader is advised to exercise caution when comparing the statistics in this report to statistics published in previous reports. In most cases, direct comparisons should be avoided.*

Monthly activities reports for this time period were received from 25 of the 27 school systems in the program (92.6% of program total) serving a total of 155,012 enrolled students (16.1% of the state public school enrollment total). Data from 2 school districts could not be included in this report due to staffing problems and / or administrative difficulties. For the 25 school systems that submitted data during the 10 month period, MDPH received a very high proportion (97.2%) of the 250 expected monthly reports. For consistency, missing data from the 2.8% of the monthly reports that were not received were filled with seasonally-adjusted district averages.

For the 25 districts that form the basis of this report, the median student enrollment was 2,769, with a range of 525 to 25,524 students. Urban, suburban, and rural districts were represented in these samples, as were regional and vocational school systems.

[1] One ESHS contract funds two districts.

[2] This applies to the annual data reports covering the 1995-1996, 1996-1997, and 1997-1998 school years.

Data Analysis Methods

In order to reduce the potential for confusion, the statistical concepts and terms used in this report are described below.

For each measurement or "indicator," a ***district-level statistic*** is determined in each district by calculating a monthly average for the 10-month evaluation period. The **monthly average** for a particular district is calculated by adding up the total number of events or encounters that occurred in a particular district during the evaluation period and dividing that total by the number of months included in that evaluation period. Because it is awkward to refer constantly to the "monthly average for the district" or the "district-based monthly average," these data are referred to as the **district average**. These two terms--the monthly average and district average--are used interchangeably in this report. All monthly averages in this report were calculated over the same ten-month period (September, 1998 to June, 1999).

Wherever possible, standard units of analyses (*rates*) are used, as they facilitate both cross-district and historical comparisons which can provide context and meaning to the statistics. The standard units of analysis that were used most frequently in this report are the monthly rate per 1,000 student health encounters, the monthly rate per 1,000 enrolled students, and the monthly rate per full-time equivalent (FTE) nurse. The **monthly rate per 1,000 student health encounters** is calculated by dividing the monthly average for that indicator by the total number of student health encounters in that district and multiplying the result by 1,000. Similarly, the **monthly rate per 1,000 enrolled students** is calculated by dividing the monthly average by the total number of enrolled students in that district and multiplying the result by 1,000. Rates per thousand enrolled students were calculated utilizing October 1998 student enrollment figures provided by the Massachusetts Department of Education (see Appendix A). Finally, the **monthly rate per full-time equivalent (FTE) nurse** is calculated by dividing the monthly average by the total number of Registered Nurse FTEs in that district. Sometimes the rate is not based on an average of *monthly* data but on *full school year* data. For example, the **rate of health screenings per 1,000 students** is determined by dividing the total number of screenings *that year* by the number of students and multiplying the result by 1,000.

Program-wide statistics describe not individual districts, but the ESHS/ESHSC program as a whole. In these calculations, each district represents a data point that is used in calculating summary statistics. For example, when averages are calculated for the 25 districts, the result is a collection of 25 district averages that can be arrayed from lowest to highest along a frequency distribution. When frequency distributions are *skewed* (that is, the values tend to clump around either the lowest or highest value, rather than around the middle), the *median*, rather than the *average*, is used to measure central tendency. *Because most of the ESHS/ESHSC frequency distributions were skewed, the median is used throughout this report.* The **median** represents the number above and below which exactly 50% of the districts fall. It is a better measure of central tendency than the *average* for skewed data, because the average tends to be more affected by extreme values. The most common use of median in this report is with district-based monthly averages; for a particular indicator, the median for the group of ESHS/ESHSC districts (a *program-level* statistic) is the district average (or monthly average) above and below which exactly 50% of the individual district averages fell. The **range** of a set of district averages refers to the lowest and highest values across the entire group of ESHS/ESHSC districts. The district with the median value for an indicator is sometimes referred to as the **median district.** The median value across all the monthly district averages is also referred to as the **median district average**.

Medians can also be calculated for rates. For example, the **median Injury Report rate** (i.e., Injury Reports per 1,000 health encounters) is calculated by first putting the total number of Injury Reports in the form of a rate (for each district, dividing the total number of Injury Reports by the number of student health encounters and multiplying by 1,000), and then finding the median of these rates.

Data Limitations

This report focuses exclusively on the delivery of school health services by nursing staff. In addition, because project sites were not selected to serve as a representative sample of the Commonwealth, this summary is descriptive in nature and is not intended to be used to make generalized statements about health services in all Massachusetts public schools. Furthermore, many of the statistics presented in this year's report should not be directly compared to statistics presented in past reports. This is because different school districts have participated in the program in different years, not all school districts involved in the program in a given year submitted complete data, and the statistics presented in the reports were calculated from data collected in different portions of the school year (from either a 4-month or a 10-month period). The descriptive data presented here also do not capture the dynamic and multi-faceted nature of health services delivery in a school system, which would require in-depth qualitative analysis of the program participants. Furthermore, almost one-half of the school districts in the program did not have computerized records of office visits and relied on paper logs and hand-tallying of data by individual nurses. In these cases, it is impossible to control for factors such as data-entry errors at the district level, consistent misinterpretation of data elements, and numerical "guesstimates" provided by participants. Some of these data quality problems can lead to significant under- or over-counting. Finally, interpretation of the data is limited because we have not attempted to describe the influence of school district demographics or other participant differences in our analyses.

Participating districts were required to implement, in a short period of time, both program innovations that entailed major organizational change and, in most cases, the development of an internal data collection system (see **Appendix B**). Therefore, this report represents a preliminary attempt to measure the health services activity in participating school systems. Improvements in data collection procedures, data collection tools, and data collection instructions and training occur on a continuing basis, leading to continued improvements in data validity and reliability.

Findings

School Nurse Staffing Patterns

For the **25** ESHS/ESHSC districts whose data contributed to this report, the equivalent of **275.8** full-time school nurses served a total of **155,012** students during the 1998-99 school year.[3]

As a result of ESHSP funding, **19.0** school nurse full-time equivalents (FTEs) were added to school systems. Funding sources for the **275.8** total school nurse FTEs in the districts can be broken down as follows:

- **19.0 (6.9%)** were funded by the MDPH Enhanced School Health Services Program;
- **256.8 (93.1%)** were funded through local school budgets and other sources.

The ESHSP median was **520** students per nurse, a ratio between that recommended by the American Nurses Association (ANA) for regular education populations **(1 to 750)** and that recommended for special populations **(1:225)** or for severely/profoundly disabled populations **(1:125)**.[4] Across the 25 districts, nurse to student ratios ranged from **1:241 to 1:912**; three of those districts (**12%**) had a nurse to student ratio that fell below the ANA guidelines for regular student populations.

School Health Services Activity

The primary goals of the Enhanced School Health Services Program are to reinforce the infrastructures of existing school health services programs and to improve the delivery of health services to students. Toward that end, program participants were required to assess over time the type and scope of school nursing activity in their districts. These activities were divided into seven categories of data: **1) health encounters, 2) injury reports, early dismissals, and referrals for emergency health services, 3) medication management, 4) health screenings, 5) medical procedures, 6) linkages, and 7) nursing case management**. *Unless otherwise specified, the following data provide a full* ***ten-month overview*** *of the health services activity in these districts during the 1998-99 school year.*

Health Encounters

Districts tracked on a monthly basis the total number of student health encounters. An "encounter" was defined as *any contact with a student during which the school nurse provided counseling, treatment, or aid of any kind*. Casual conversations fell outside this definition and were not counted. In addition, mandatory screenings were not counted because these are routine population-based activities; these types of services were tracked separately, however.

Between September 1, 1998 and June 30, 1999, 25 school districts reported a combined total of **1,795,863** student health encounters (see table below). Monthly averages for individual districts for this 10-month period ranged from **459** encounters per month to **28,512** encounters per month, with the median being an average of **5,064** encounters per month. While some students may need to be seen

[3] These statistics include data from the ESHSC *lead* districts, but do not include data from the ESHSC *recipient* districts. The count of "School Nurses" includes only Registered Nurses (RNs) and nurse leaders, but excludes other health support staff which may have been funded by the ESHS contract.

[4] American Nurses Association. *Standards of School Nursing Practice*, Kansas City, MO, 1983.

several times each month, others need not be seen at all. Over the ten-month period, the median number of health encounters per student was **1.4** *health encounters per student* per month (range: **0.4 to 3.9**). For nurses, the median encounter rate was **637.9** student health encounters *per full-time school nurse* per month (range: **339.0 to 1,195.9**).[5] The overwhelming majority (95.3%) of the 1,795,863 student health encounters took place *inside* school health rooms.

Number and Percentage of Student Health Encounters
September 1, 1998 - June 30, 1999 (n=25 districts)

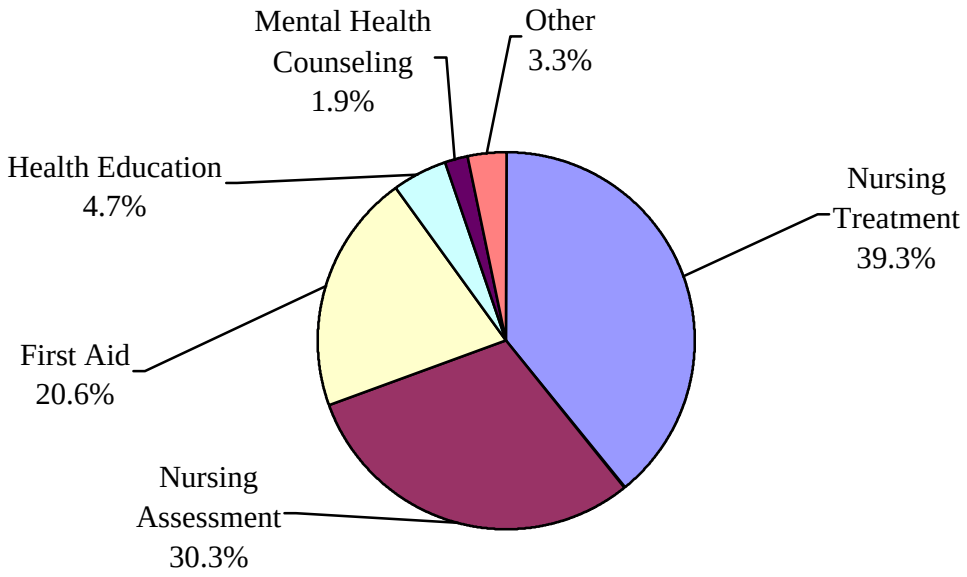
	Nursing Assess-ment*	Nursing Treat-ment*	First Aid	Individual Health Education	Mental Health Counseling	Other	TOTAL
Inside health room	517,777	671,929	351,840	81,053	32,888	55,840	1,711,327
Percent of total	30.3%	39.3%	20.6%	4.7%	1.9%	3.3%	100.0%
Outside health room	11,039	17,958	6,218	8,445	1,865	39,011	84,536
Percent of total	13.1%	21.2%	7.4%	10.0%	2.2%	46.1%	100.0%
Total	528,816	689,887	358,058	89,498	34,753	94,851	1,795,863
Percent of total	29.4%	38.4%	19.9%	5.0%	1.9%	5.3%	100.0%

* "Nursing Assessment" includes assessment, triage, and reassessment of illness by nurses. "Nursing Treatment" includes medication administration, as well as nursing procedures and immunization administration.

Nursing treatment; nursing assessment, triage, and reassessment; and first aid were the most common types of encounters (see the figure below).

***Types of Student Health Encounters Inside the Health* Room**

September 1, 1998 - June 30, 1999 (n=25 districts)



[5] For these calculations, "school nurses" includes only RNs and nurse leaders.

Health service encounters with school staff (i.e., teachers and administrators) regarding their *own* health issues were also monitored by school systems. During the school year, school nurses in 24 districts managed a total of **38,385** staff health encounters (see table below). Monthly averages for staff health encounters among the 24 school districts ranged from **8.1** to **306.8** staff health encounters per month. The median monthly average for a single district was **114.0** staff health encounters per month. The median monthly average *per full-time school nurse* was **8.4** staff health encounters per nurse each month.

Number and Percentage of Staff Health Encounters
September 1,1998 - June 30, 1999 (n=24 districts)

	Nursing Assess-ment*	Nursing Treat-ment	First Aid	Individual Health Education	Mental Health Counseling	Other	TOTAL
Number of Encounters	10,614	10,032	6,566	4,898	2,008	4,267	38,385
Percent of total	27.7%	26.1%	17.1%	12.8%	5.2%	11.1%	100.0%

* Includes nursing assessment, triage, and reassessment of illness by nurses

Injury Reports, Early Dismissals, and Referrals for Emergency Health Services

An important function of school nursing practice is to provide on-site health services to students who are sick, injured, or experiencing a serious health emergency. Each month sites tallied the number of on-campus student injury reports, early dismissals due to illness, and referrals for emergency health services in their districts. These events represent a small subset of the total number of student health encounters in a school system. For the entire school year, 25 districts reported:

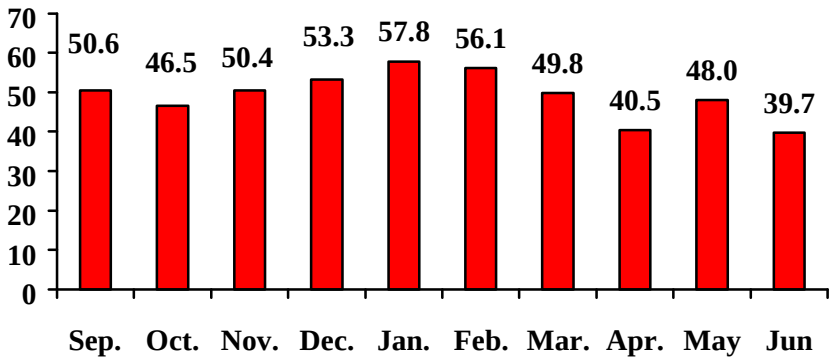
- a total of **8,697** *injury reports* with the median district reporting **19.0** reports per month (range: **4.3 to 135.5** reports per month);
- a total of **98,233** *early dismissals due to illness* with the median district reporting **210.2** dismissals per month (range: **30.6 to 1,468.6** dismissals per month);
- a total of **12,150** *referrals for emergency health services* with the median district reporting **8.6** referrals per month (range: **4.3 to 135.5** referrals per month).

The following graph compares, *for every 1,000 student health encounters*, the median rates of student injury reports, early dismissals due to illness, and referrals for emergency health services in the 24 school districts for the time period September 1, 1998 - June 30, 1999:

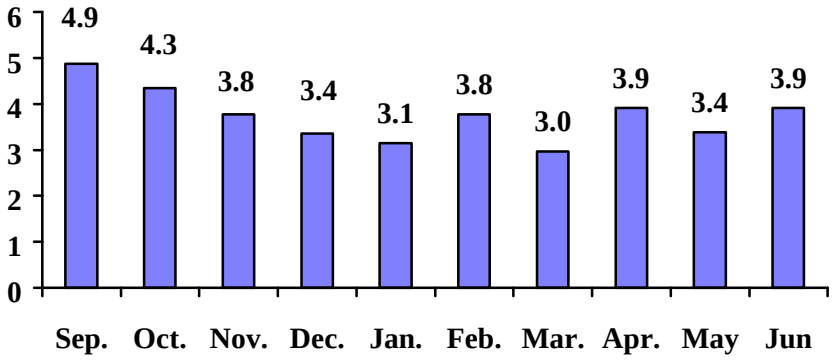
Student Injury Reports, Early Dismissals, and Referrals for Emergency Health Services:

Median Number of Incidents Per 1,000 Student Health Encounters
September 1, 1998 - June 30, 1999 (n=24 districts)

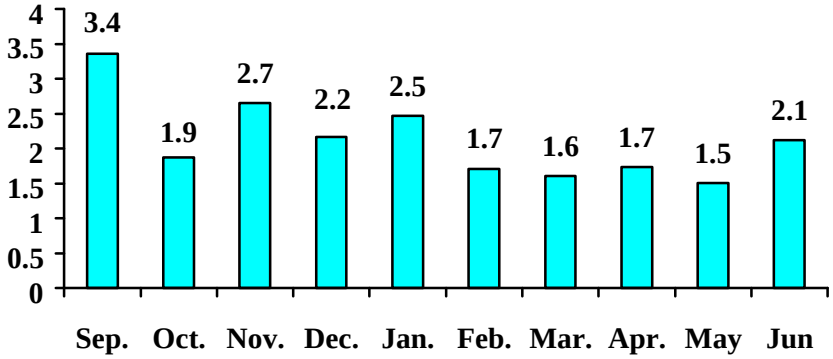
Early Dismissals



Injury Reports



Emergency Referrals



Medication Management

In 1993, the Massachusetts Department of Public Health promulgated regulations governing the administration of medications in public and private schools. The purpose of these regulations (105 CMR 210.000) is to provide minimum safety standards for the administration of prescription medications to students during the school day.

The school nurse's role in managing the medication administration program for the district is broad in scope. In addition to developing district-wide medication policies in collaboration with the school committee, school administration, and school physician, the school nurse:

- administers medications to students (including monitoring students' response to medications);
- delegates the administration of selected medications to appropriately trained school staff (if the district is registered with the MDPH to do so);
- ensures the proper training and supervision of these designated staff; and
- establishes a formal record-keeping system for the district's medication administration program.

ESHS districts tracked the number of *students* using prescription medications as well as the number of *prescriptions* that had been ordered for their students. During the school year, 23 districts reported a total of **8,320** *students* using prescription medications in an average month, with the median district reporting a monthly average of **222** students (range: **50 to 910**). The average number of *prescriptions* for the ESHS program was derived by calculating for each district the monthly average number of prescriptions for each medication type and then summing these averages across all the districts. Note that the number of *students* with prescriptions does not equal the number of *prescriptions* because some students had more than one prescription. Among prescriptions taken on a scheduled, daily basis, psychotropic medications were the most common, while among prescriptions taken on an "as-needed" (PRN) basis, asthma medications were the most common (see table below).[6]

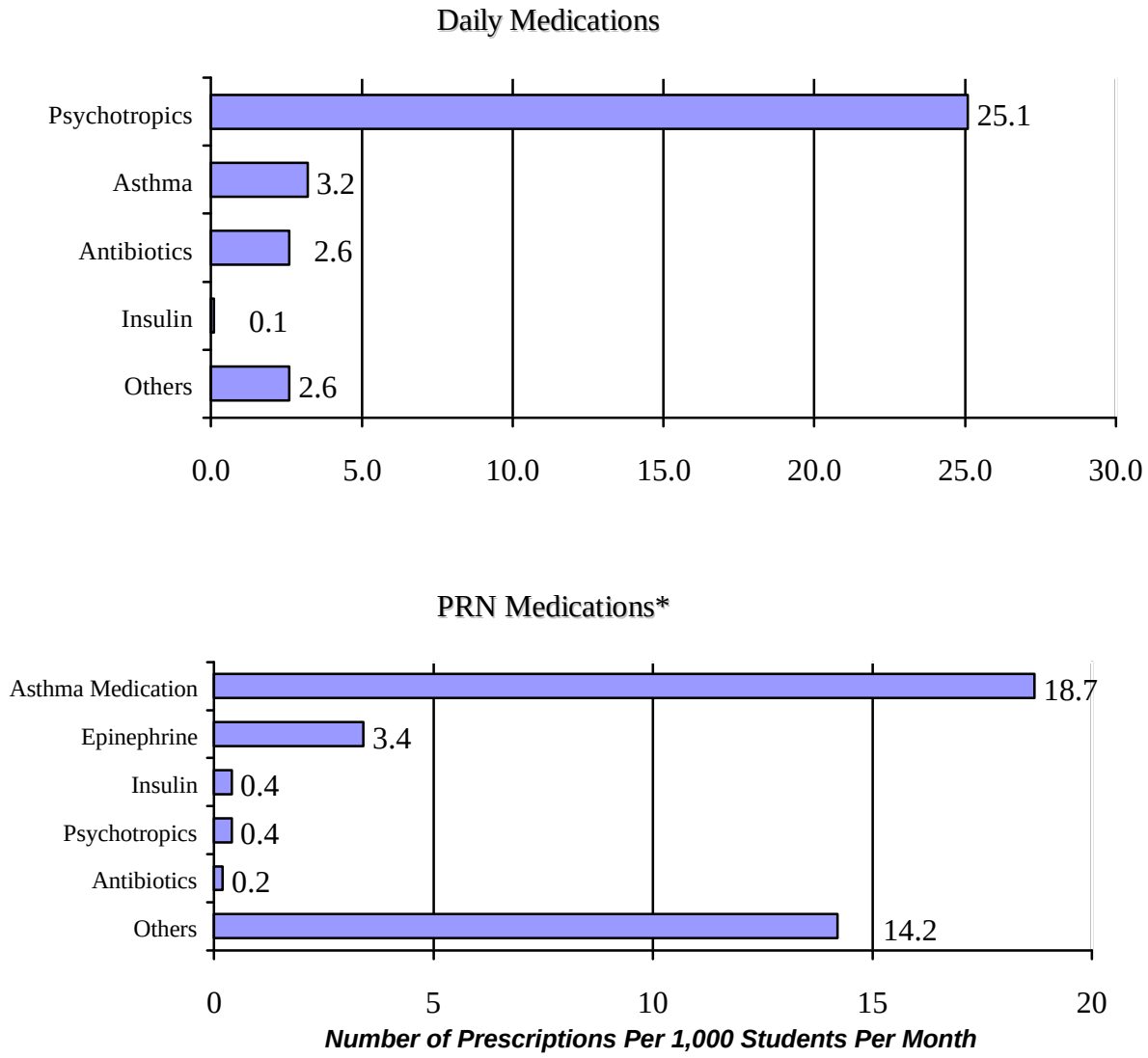
Number of Student Prescriptions Reported to School Nurses (Monthly Average) September 1, 1998 - June 30, 1999 (n=25 districts)

	Anti-biotics	Asthma	Epi-nephrine	Insulin	Psycho-tropic	Others	Total
Daily Medications							
All Districts	306.7	596.2	6.7	33.9	4,332.2	499.0	5,774.7
Median District	11	12	0	1	86	11	45.2%
Lowest Value	0	0	0	0	12	0	
Highest Value	35	77	3	5	872	88	
PRN Medications							
All Districts	119.6	2,797.2	407.2	66.6	57.3	3,554.1	7,002.0
Median District	1	68	13	2	1	50	54.8%
Lowest Value	0	3	0	0	0	4	
Highest Value	35	402	42	9	13	1,218	
							12,777

[6] PRN is an abbreviation for "pro re nada," a Latin term meaning "as needed." PRN medications are not scheduled for set times, but given as needed. For example, an analgesic medication that is given whenever pain or discomfort occurs is considered a PRN medication.

The following figure compares, across 25 school systems, prescription rates (the median number of students on prescription medications each month per 1,000 students in the district) for four types of medications. These numbers reflect the students *known by school nurses* to be on prescription medication; they most likely *underestimate* the true number because students who self-administer do not always come to the attention of school nurses.[7]

Number of Prescriptions for Medications
Median Monthly Rate Per 1,000 Students
September 1, 1998 - June 30, 1999 (n=25



* PRN refers to medications taken on an "as-needed" basis.

[7] Regulations require that students inform nurses about self-administered medications. If students do not comply with regulations, these medications may not come to the attention of school nurses.

Health Screenings

Public schools in Massachusetts are required by law to conduct postural, hearing, and vision screening on all students.[8] Some school systems have also opted to conduct voluntary health screenings based on the particular health needs of their students. School nurses are responsible for ensuring that these screenings are completed and for referring students for follow-up care when needed. During the school *year*, school nurses at 24 districts conducted the following number of required and voluntary student health screenings. These numbers represent *initial* screenings, and do not include *re-screenings*:

Yearly Student Health Screenings
September 1, 1998 - June 30, 1999 (n=24 districts)

Type of Screening	Screenings	Screenings Per 1,000 Students			% of Districts
	All Districts	Median District	Lowest Value	Highest Value*	Reporting 1 or More
Vision	103,376	720.9	202.5	1,040.7	100.0%
Hearing	74,109	620.5	169.2	1,040.7	95.8%
Height/Weight	45,748	549.8	60.1	1,021.2	91.7%
Postural	39,764	334.4	66.0	521.2	100.0%
Dental	22,304	140.9	1.1	808.4	58.3%
Nutritional	7,023	22.9	0.2	332.1	58.3%

Medians and ranges excluded districts that did not track that type of screening.

School nurses also performed pediculosis exams. For the 22 districts that tracked these exams each month, the average number of exams per month, including follow-up exams, totaled **10,492.9** (range: 0.3 to 2,280.5).

[8] *The law permits waivers under certain circumstances.*

Medical Procedures

The enrollment of children assisted by medical technology in the public school system has increased in recent years. This phenomenon presents multiple challenges for school administrators, parents and guardians, school health services personnel, teachers, and students. ESHSP school districts collected data on students assisted by medical technology and reported the following:

Summary of Medical Procedure Activity
September 1, 1998 - June 30, 1999 (n=25 districts)

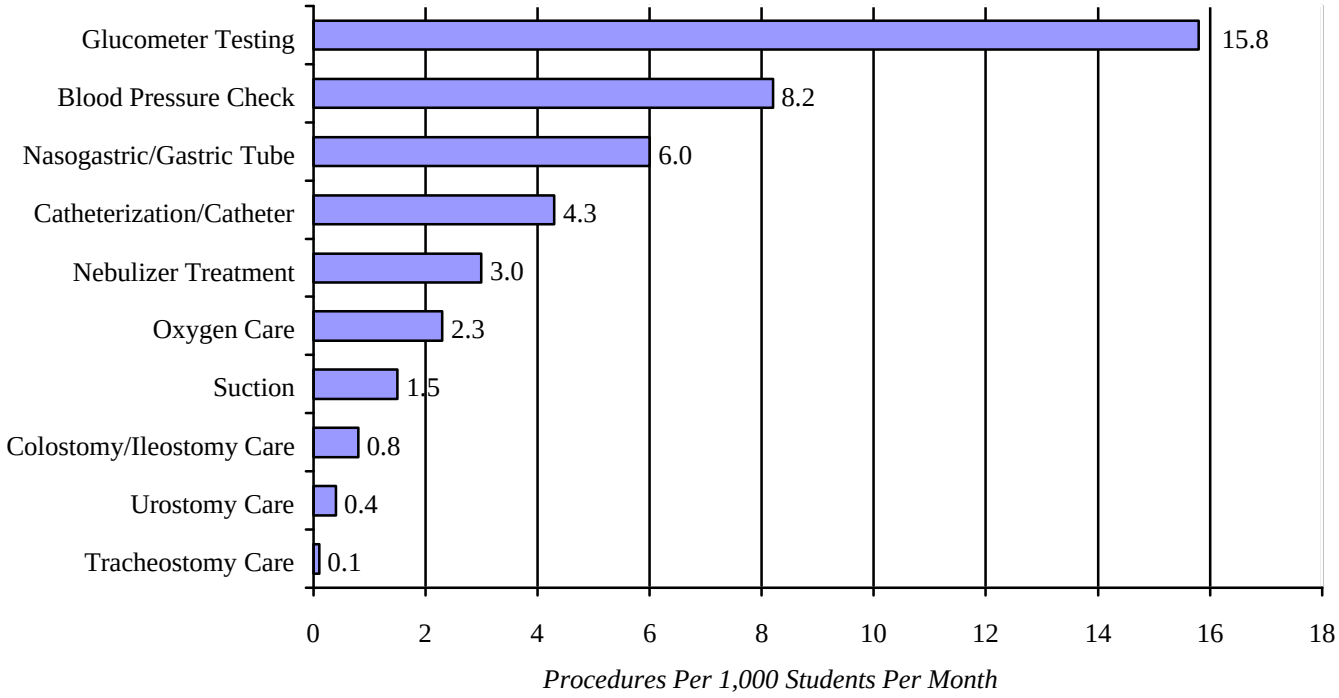
Type of Procedure	Average # of Procedures Per Month				Average # of Students Per Month	Average # Minutes/ Procedure	% of Districts Per-forming Procedure
	All Districts	Median District	Lowest Value	Highest Value	All Districts	Median District*	
Glucometer Testing	2,421	69	3	475	184	6.6	100.0%
Blood Pressure Check	1,203	25	2	287	837	4.0	100.0%
Nasogastric/Gastric Tube	732	2	0	213	48	19.3	56.0%
Catheterization/Catheter	577	17	0	76	36	16.2	60.0%
Nebulizer Treatment	512	8	0	88	156	17.5	88.0%
Suction	88	0	0	37	15	15.0	24.0%
Oxygen Care	78	0	0	44	19	5.0	20.0%
Colostomy/Ileostomy Care	69	0	0	35	5	10.6	28.0%
Tracheostomy Care	24	0	0	17	7	11.1	24.0%
Urostomy Care	3	0	0	2	0	5.0	8.0%

* Among those districts where the procedure was performed at least once.

In addition, 25 districts reported performing a combined total of 709 "Other" medical procedures per month, bringing the overall program total for *all* types of medical procedures to **6,415** procedures per month. The *median monthly number of procedures* for the 25 districts in the program was **198** procedures per month; the median number of medical procedures *per full-time nurse* each month was **21.8** procedures.

Monthly medical procedure rates per 1,000 enrolled students are shown in the figure below:

Medical Procedure Rates*
Number of Procedures Per 1,000 Enrolled Students Per Month (Median Rate)
September 1, 1998 - June 30, 1999 (n=25 districts)



The lowest and highest values for these rates are summarized in the table below:

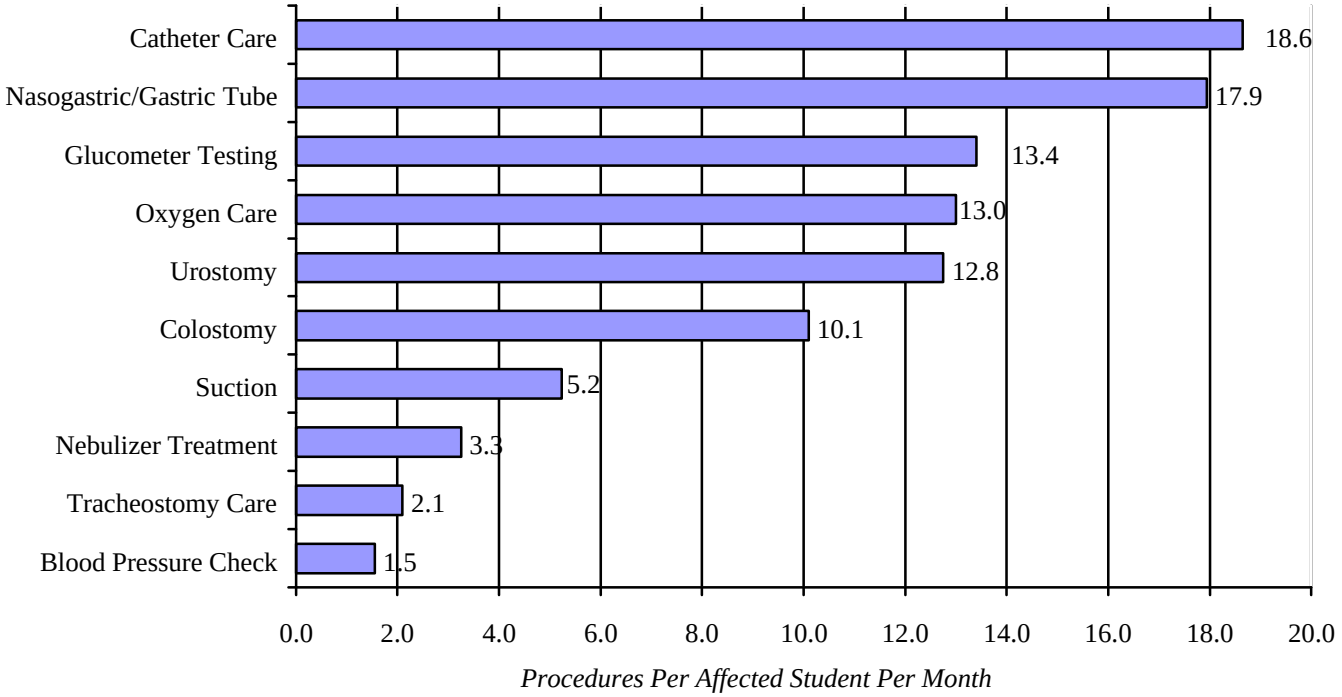
Medical Procedure Rates*
September 1, 1998 - June 30, 1999 (n=25 districts)

Type of Procedure	Monthly Rate Per 1,000 Students		
	Median District	Lowest Value	Highest Value
Glucometer Testing	15.8	5.1	37.6
Blood Pressure Check	8.2	0.8	33.3
Nasogastric/Gastric Tube	6.0	0.0	34.8
Catheterization/Catheter	4.3	2.4	27.0
Nebulizer Treatment	3.0	0.1	13.3
Oxygen Care	2.3	0.0	7.5
Suction	1.5	0.2	3.0
Colostomy/Ileostomy Care	0.8	0.0	3.8
Urostomy Care	0.4	0.1	0.7
Tracheostomy Care	0.1	0.0	0.7

* Among those districts performing the procedure at least once.

Students requiring catheterization/catheter care and nasogastric/gastric tube care needed more frequent attention than students needing other types of procedures (see figure below). These two types of procedures also required more time to perform than most other procedures (see the table on page 12). In contrast, blood pressure checks were administered far more widely among the student population than other types of procedures (see the table on page 12), yet each student needing a blood pressure check required only a few such procedures each month (see the figure below), and each check took only a few minutes.

Medical Procedure Frequency*
Number of Procedures Administered Per Month Per Affected Student (Median Rate)
September 1, 1998 - June 30, 1999 (n=25 districts)



*Among those districts performing the procedure at least once.

Linkages

ESHSP school systems identified students without primary care and, in consultation with their families, referred them to appropriate health care services. School systems also provided many referrals to students' existing primary care providers. During the ten months of the 1998-1999 school year, 25 participating districts reported the following:

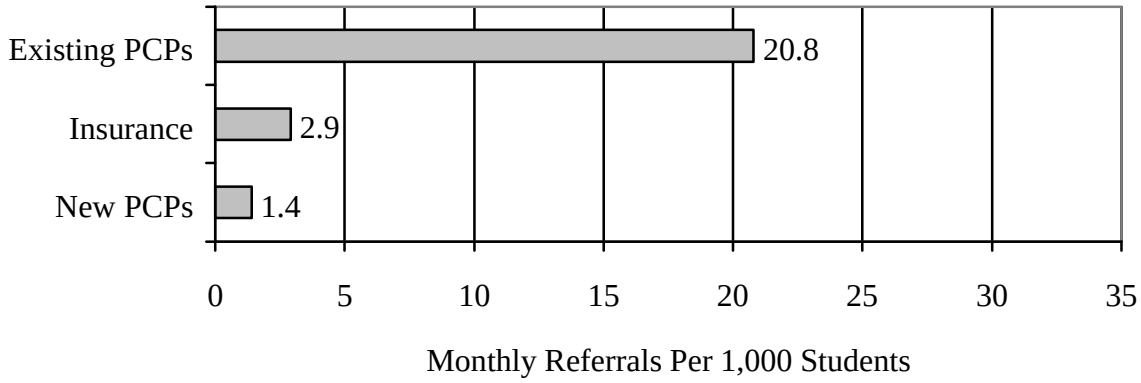
- ESHSP districts identified and referred a combined total of **52,126** students to primary care providers. These referrals included:
  - **4,409** new referrals to primary care providers, and
  - **47,717** referrals to students' existing primary care providers.

- The average number of referrals per month for the median district was **8.0 students per month** for new primary care providers (range: **0.0 to 70.7** students per month), and **77.1 students per month** for existing primary care providers (range: **8.8 to 748.2** students per month).

- The median monthly referral rate *per 1,000 students* to new primary care providers was **1.4 per 1,000 students** per month (range: **0.0 to 7.3**); the median monthly rate for referrals to existing primary care providers was **20.8 per 1,000 students** per month (range: **10.1 to 118.3**);

In addition, 25 districts reported that they referred a total of **4,663** uninsured students to health insurance providers (including MassHealth and Children's Medical Security Plan) during the 1998-1999 school year. The average number of referrals per month for the median district was **10.3** students per month (range: 1.2 to 76.8). The median monthly referral rate per 1,000 students to health insurance providers was **2.9 per 1,000 students** per month (range: **0.4 to 12.2**).

Primary Care and Insurance Provider Referral Rates
September 1, 1998 - June 30, 1999
(n=25 districts)



Nursing Case Management

Data from the monthly activities report revealed that, beyond providing direct care to students, school nurses spent a significant portion of their day performing case management duties that included communication with families, other school staff, and community health care providers about student health concerns. During the school year, **275.8** full-time school nurses from **25** districts conducted:

- a total of **272,066** *health counseling and education encounters with parents* (including phone calls, meetings, and conferences, but excluding home visits), with the median district reporting **759** encounters per month (range: **56 to 3,533** encounters per month);

- a total of **1,327** *home visits*, with the median district reporting **1.1** home visits per month (range: **0.0 to 28.5** home visits per month);

- a total of **116,745** *phone calls, meetings, and conferences with other school staff* about student health issues, with the median district reporting **188.6** meetings per month (range: **23.9 to 2,275.7** meetings per month);

- a total of **35,762** *phone calls with other agencies and health providers* about student health issues and a median per district of **86.1** phone calls per month (range: **6.7 to 628.1** phone calls per month).

The following chart shows case-management activity levels *per school nurse FTE per month* across the 25 participating districts:

Nursing Case Management Activities:
Number of Student-Health Related Activities Per Month Per Nurse FTE
September 1, 1998 - June 30, 1999 (n=25 districts)

Type of Activity	Median (Per FTE)	Lowest Value (Per FTE)	Highest Value (Per FTE)
Calls, meetings, & conferences with parents	87.7	37.1	222.5
Calls, meetings, & conferences with staff	26.6	9.7	103.4
Phone calls with agencies/providers	9.0	1.5	28.6
Home visits to families	0.2	0.0	1.5

For children with special health care needs, nursing case management involves the development of Individual Health Care Plans (IHCPs) designed to maximize their potential for learning. An IHCP, usually developed by the school nurse in conjunction with the student's family, the school physician, other school staff, and relevant community health care providers, is an individualized care plan that stipulates a student's specific medical, nursing, emergency care, and educational needs while in school during the school day . IHCPs are reviewed on a regular basis to ensure that students receive the appropriate health care they need during the school day.

During the 1998-1999 school year, 25 Enhanced sites reported:

- a total of **4,227** *new* IHCPs, with the median district reporting **4** new IHCPs per month (range: **0 to 43** IHCPs per month);

- a median, per full-time school nurse, of **0.6** *new* IHCPs per month (range: **0 to 8.5** IHCPs per month);

- a total of **11,030** *ongoing* IHCPs per month, with the median district reporting **42** ongoing IHCPs per month (range: **1** to **649** IHCPs per month);

- a median rate, per full-time school nurse, of **7.0** *ongoing* IHCPs per month (range: **0.3 to 48.9** IHCPs per month).

Health Education and Tobacco Prevention

School nurses are often called upon to deliver health education in the classroom. In this teaching role they provide information to students on topics such as nutrition education, injury prevention, and human growth and development. Over the ten-month period, 275.8 full-time school nurses in 25 districts delivered:

- a total of **4,479** classroom presentations to students, with the median district reporting **13.2** presentations per month (range: **0.4 to 57.6** presentations per month);
- a median rate of **1.4** classroom presentations per month per full-time nurse (range: **0.1 to 10.3** presentations per month per school nurse).

In addition to classroom presentations, nurses in 25 districts provided individual assistance and counseling on nutritional issues to **2,738** students per month. The median district provided nutritional assistance to **24.3** students per month (range: **4.1 to 1,029.6**). The median rate per 1,000 students was **7.1** students per 1,000 enrolled students per month.

As part of the Massachusetts Tobacco Control Program, the Enhanced School Health Services Program was designed to incorporate tobacco use prevention and cessation activities into existing school health services programs. Accordingly, ESHS districts conducted targeted tobacco education activities over the course of the project that included, among other things, at least one survey of student tobacco use. In their most recent efforts, **25** school systems surveyed a total of **19,817** students on their tobacco use, equivalent to **12.8%** of the total student enrollment in these districts.

In addition, during the1998 -1999 school year, school nurses in ESHS districts provided the following tobacco prevention/cessation services:[9]

- a total of **1,905 students and 19 adults** participated in tobacco prevention education groups in 19 districts, with the median district reporting **1.6** individuals participating per month (range: **0.1 to 104.2**);
- a total of **393 students and 2 adults** participated in tobacco cessation groups in 15 districts, with the median district reporting **0.8** individuals participating per month (range: **0.1 to 12.0**);
- a total of **1,864 students and 533 adults** received individual tobacco cessation counseling in 23 districts, with the median district reporting **5.4** individuals participating per month (range: **0.2 to 58**);
- a total of **507 students and 136 adults** were referred to other tobacco prevention/cessation services in 20 districts, with the median district referring **1.3** individuals per month (range: **0.1 to 16.9** individuals).

[9] Note: The median was calculated in each case only from those districts providing each type of service.

Summary

The information collected by the Enhanced School Health Services Program provides a valuable snapshot of school nursing practice in a diverse but non-representative cohort of Massachusetts public schools. The data reveal that school nurses perform a wide array of duties -- direct care, health education, administrative case management, and policy/program development and oversight -- on behalf of students whose health needs range from routine to serious and complex.

Analysis of the ESHS program data for the school year beginning September, 1998 and ending June, 1999 showed the following:

- The overwhelming majority of health encounters (95.3%) occurred inside health rooms.
- Students went to see the school nurse at a (median) rate of 1.4 health encounters per student each month. There was substantial variability between schools, with a 10-fold difference between the district with lowest encounter rate (0.4) and the district with the highest encounter rate (3.9).
- Rates for early dismissal due to illness have a seasonal pattern, peaking in the winter months (December, January, and February) and then declining in the spring months. The pattern for injury reports is almost the reverse, peaking in the fall, declining in the winter when outdoor activities decline, and rising again in the spring. There does not appear to be a clear seasonal pattern for emergency referrals.
- The majority (54.8%) of the students taking prescription medications took them on an as-needed (PRN) basis, rather than on a daily basis. Excluding the "Other" medication category, however, the majority of prescriptions (60.5%) were administered on a daily, rather than on a PRN, basis.
    - Among students on daily prescription medications, psychotropic medications were by far the most common (25.1 per 1,000 enrolled students, for the median district).
    - Among students taking as-needed (PRN) medications, asthma medications were the most common (18.7 per 1,000 enrolled students, for the median district).
- School nurses performed 21.8 medical procedures per full-time nurse each month (median rate). Glucometer testing and blood pressure testing were the procedures most frequently performed. Students requiring catheterization/catheter care and nasogastric/gastric tube care needed the most attention, in terms of the number of procedures needed per month and the time required per procedure.
- Tobacco prevention programs reached substantial numbers of individuals, although activity levels varied widely across districts:
    - Participation was much higher in *individual* tobacco cessation counseling (1,864 students and 533 adults) than in *group* cessation counseling (393 students and 2 adults).
    - Group activities focused on *education* (1,905 students and 19 adults) were more popular than group activities focused on *counseling* (393 students and 2 adults).

Future data collection efforts will seek to expand upon current knowledge of health needs in the school setting. Continued refinements in data collection efforts will more accurately capture school nursing and other school health activity. Over time, information on trends in school health encounter activity may assist school nursing staff in improving their delivery of prevention education and intervention services to the school community.

APPENDIX A

Enhanced School Health Services Program Sites: 1997-98

Regular ESHSP Sites

DISTRICT NAME	DISTRICT TYPE	REGION	GRADES	STUDENTS
Central Berkshire Regional (Dalton)	Regional Academic	West	K-12	2,488
Fitchburg	City	Central	K-12	5,901
Harwich	Town	Southeast	K-12	1,544
Hudson	Town	Central	K-12	2,711
Lowell	City	Northeast	K-12	16,338
Lynn	City	Northeast	K-12	14,826
Marblehead	Town	Northeast	K-12	2,826
Masconomet Regional (Topsfield)*	Regional Academic	Northeast	7-12	1,638
--Boxford Elementary	Town	Northeast	K-6	1,075
--Middleton Elementary	Town	Northeast	N-6	779
--Topsfield Elementary	Town	Northeast	K-6	678
Methuen	Town	Northeast	N-12	6,728
Mohawk Trail Regional (Buckland)	Regional Academic	West	K-12	1,748
Newburyport	City	Northeast	K-12	2,455
Northampton	City	West	K-12	2,983
Pioneer Valley Regional (Northfield)	Regional Academic	West	K-12	1,219
Revere	City	Northeast	K-12	6,069
Smith Voc. & Agricultural High (Northampton)	Voc. & Agricultural	West	9-14	525
Somerville	City	Northeast	N-12	6,437
Springfield	City	West	K-12	25,524
Triton (Byfield)	Regional Academic	Northeast	K-12	3,492
Uxbridge	Town	Central	K-12	2,356

* For this report, data from Boxford, Middleton, Topsfield, and Masconomet Regional were combined for purposes of data analysis.

ESHSP Consultation Sites

DISTRICT NAME	DISTRICT TYPE	REGION	GRADES	STUDENTS
Boston	City	Southeast	K-12	63,043
Brockton	City	Southeast	K-12	16,660
Chelsea	City	Northeast	K-12	5,765
East Longmeadow	Town	Southeast	K-12	2,640
Framingham	Town	Southeast	K-12	7,893
Lawrence	City	Northeast	K-12	12,419
Minuteman Voc. Tech. Reg. (Lexington)	Regional Voc. Tech.	Northeast	9-13	913
Salem	City	Northeast	K-12	5110

APPENDIX B

Enhanced School Health Services Program
Minimum Deliverables

Infrastructure for the comprehensive School Health Program strengthened.

1. Quarterly meetings of School Health Advisory committee.
2. Implementation of school district and building emergency plan by Year 1.
3. 100% students requiring prescription medications during the day have medication administration plan by Year I.
4. Role of school health services in student support/intervention program established.
5. Minimum of 1 support group operational in addition to Tobacco by Year II.
6. Annual student health needs assessment conducted and analyzed.
7. A selected number of policies reviewed, revised and approved annually.
8. Position descriptions for school health personnel developed during Year I.
9. 100% of students with special health care needs have individualized health care plans by end of Year I.
10. Marketing brochure completed during Year II.

Comprehensive health education program, including tobacco prevention and cessation, strengthened.

1. Documentation of enforcement activities related to violation of the tobacco-free school policy yearly or enforcement plan for tobacco-free school policy implemented in Year I.
2. Completion of annual tobacco use assessment.
3. Establishment of target goal for reduction in tobacco use, Year II.
4. Documentation of coordinated planning with health education coordinator.
5. Participation in a local community-based coalition addressing child and adolescent health.

Students linked to primary care providers, other community health providers and community prevention programs, and referred to insurance plans if uninsured.

1. Design and implementation of on-going process for identifying primary care providers and health insurers (including HMOs) serving the current student population and referral mechanisms for children/families, Year I.
2. 90% of all students will have their primary care provider and insurance carrier identified by end of Year II.
3. 75% of all students identified as lacking a primary care provider will be referred to a provider within the first year, with incremental increases annually.
4. 100% of uninsured eligible children and adolescents referred to Children's Medical Security Plan (CMSP) or MassHealth for enrollment by end of Year I.

Management information system implemented.

1. 100% of the students' health records will be computerized by Year II.
2. Completed annual report on data specific to the program.

Development of quality improvement process with identification of projects to document the effectiveness and efficiency of the school health service program.

1. In relation to efficiency, work with BFCH to determine formula to calculate cost per encounter.
2. Identification of types of student encounters (health assessment, nursing care, nursing treatment, first aid, etc.) by end of Year I.
3. Develop one health status improvement measure such as % of six graders appropriately immunized, or decrease to less than 10% number of students who use tobacco, etc.